



TissueSpec® Lung ECM Hydrogel

Catalog # MTLG101

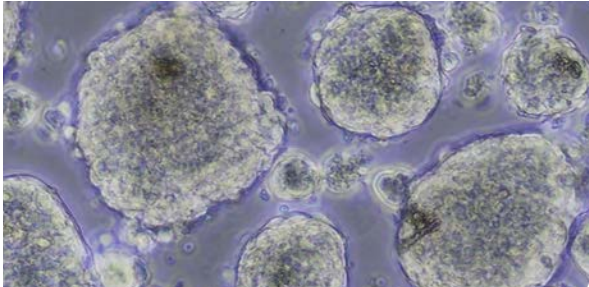
TissueSpec® Lung ECM Hydrogel is a versatile extracellular matrix product comprised of collagens and other ECM molecules of lung-specific origin (porcine). TissueSpec® hydrogels provide lung cells a soft, physiologic substrate for 3D cell culture that is easy to use and enhances cell function and cell-cell interactions.

Human lung ECM hydrogel is available through custom order.

Features

- Derived from normal porcine lung tissue
- Contains lung-specific ECM components
- Supports lung cell and organoid cultures
- Compatible with standard cell culture protocols
- Lot-to-lot consistent
- Easy to use

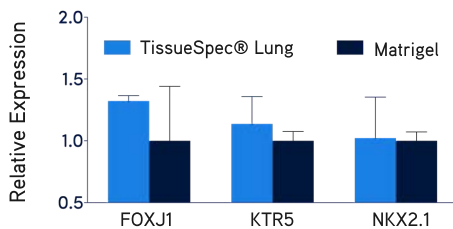
Applications in 3D cell culture



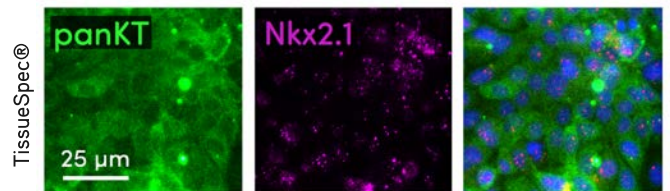
TissueSpec® Lung ECM Hydrogel can be used for 3D culture of primary lung cells, bronchospheres, or organoids to study epithelial cell differentiation, airway development, and alveologensis. TissueSpec® Lung ECM Hydrogel can also be used to encapsulate primary lung or metastatic tumor cells to recapitulate the 3D human lung microenvironment in vitro.

Maintenance of lung cell identity in TissueSpec® Lung ECM Hydrogel

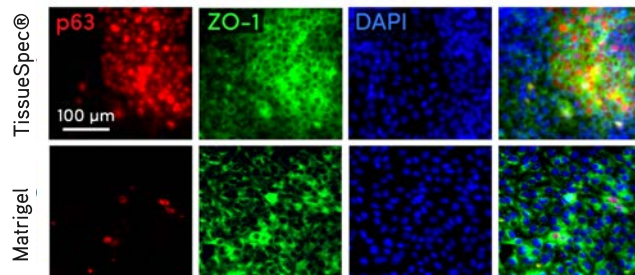
a Epithelial cell gene expression



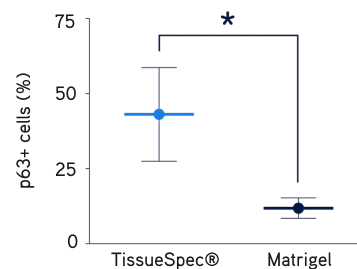
b Epithelial cell marker expression



c Airway progenitor cell maintenance



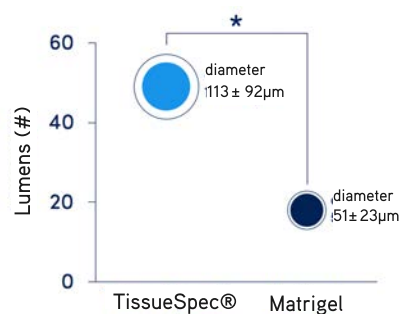
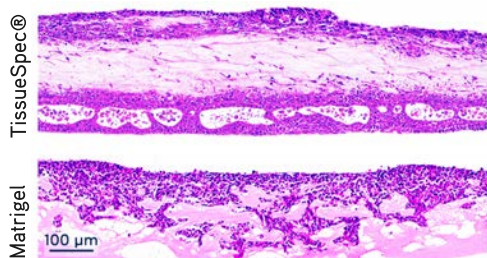
d Basal cell enrichment



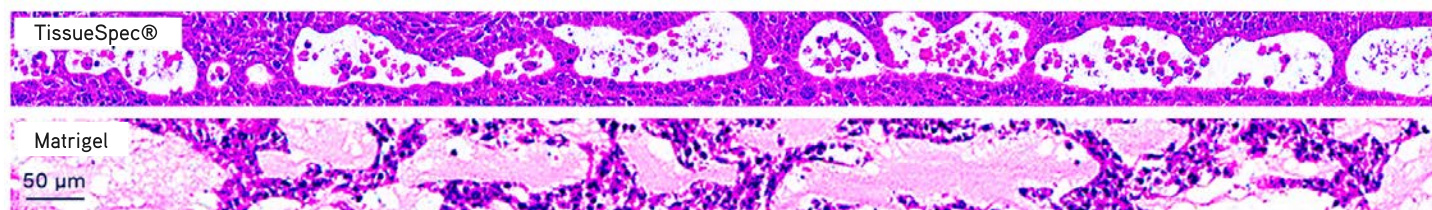
Primary normal human bronchial epithelial (NHBE) cells were cultured on thin layers of TissueSpec® Lung ECM Hydrogel or Matrigel for 10 days. TissueSpec® Lung ECM Hydrogel supported (a,b) **robust expression of normal lung epithelial cell markers** and (c,d) **significantly larger subpopulation of p63+ basal airway cells** ($p < 0.05$) compared to Matrigel.

Lung cell differentiation in TissueSpec® Lung ECM Hydrogel

a 3D structural organization



b Luminal formation



Air liquid interface cultures of primary normal human bronchial epithelial (NHBE) cells after 21 days. NHBE cells in TissueSpec® Lung ECM Hydrogels formed (a) more **organized, stratified luminal structures recapitulating the cellular architecture of the human airway**, with significantly larger average diameter compared to Matrigel ($p < 0.05$), and (b) more complex and organized morphology.

TissueSpec® Lung ECM Hydrogel composition & consistency

a Mass spec profile*

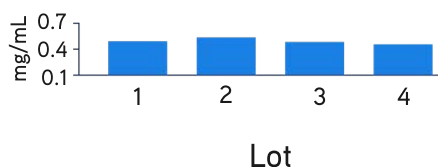
ECM components	Biomolecules
collagens	type I-VI, VIII, IX, XI, XVI
laminins	subunit $\alpha 5, \beta 2, \gamma 1$
elastin	
glycoproteins	fibrilin 1, fibulin 5 nidogen
proteoglycans	heparin sulfate aggrecan, hyaluronan

* partial list of components

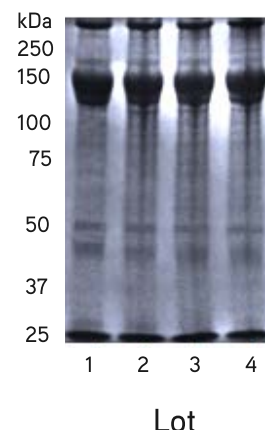
b Key components (µg/mL)

collagens (soluble)	400 - 530
elastin	40 - 50
glycosaminoglycans	3 - 5

c Collagen



d Electrophoresis



(a) Proteomic profile by mass spectrometry indicates that **TissueSpec® Lung ECM Hydrogel has a unique, lung-specific signature**. (b) Ranges of key lung hydrogel matrix components. (c) Collagen concentration and (d) gel electrophoresis demonstrate a **consistent protein profile** across multiple TissueSpec® Lung ECM Hydrogel lots.